

INTERNATIONAL SEARCH REPORT

International application No.

PCT/JP2004/016128

A. CLASSIFICATION OF SUBJECT MATTER

Int.Cl⁷ A61L27/42, A61F2/32, 2/38, C04B35/10, 35/48

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

Int.Cl⁷ A61L27/42, A61F2/32, 2/38, C04B35/10, 35/48

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Jitsuyo Shinan Koho 1926-1996 Jitsuyo Shinan Toroku Koho 1996-2005
Kokai Jitsuyo Shinan Koho 1971-2005 Toroku Jitsuyo Shinan Koho 1994-2005

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
CAPLUS/MEDLINE/BIOSIS/EMBASE (STN)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y A	JP 2000-191372 A (NGK Spark Plug Co., Ltd.), 11 July, 2000 (11.07.00), Claims 1 to 4 (Family: none)	1, 17 2-16, 18, 20 19
X Y A	JP 09-221354 A (Nikkato Corp.), 26 August, 1997 (26.08.97), Example 1, sample 13 & CN 1165124 A & TW 448135 A	1, 17 2-16, 18, 20 19
X Y A	JP 2003-040673 A (Kyocera Corp.), 13 February, 2003 (13.02.03), Page 4; table 1; Par. Nos. [0010], [0011], [0023] (Family: none)	1, 17 2-16, 18, 20 19

☒ Further documents are listed in the continuation of Box C.

☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&" document member of the same patent family

Date of the actual completion of the international search
14 January, 2005 (14.01.05)

Date of mailing of the international search report
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Name and mailing address of the ISA/
Japanese Patent Office

Authorized officer

Facsimile No.

Telephone No.

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PCT/JP2004/016128

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y A	JP 03-151978 A (Kyocera Corp.), 28 June, 1991 (28.06.91), Claim 1; page 3, lower left column, lines 14 to 18 (Family: none)	2-16, 18, 20 19
Y	JP 06-172026 A (Matsushita Electric Works, Ltd.), 21 June, 1994 (21.06.94), Claim 1; Par. Nos. [0007], [0013], [0014]; page 13; example 16 & DE 4331877 A1 & GB 2270687 A & US 5525560 A	2-4, 18, 20
Y A	JP 60-204666 A (Aisin Seiki Co., Ltd.), 16 October, 1985 (16.10.85), Claim 1; page 1, right column; pages 14 to 16 (Family: none)	5-11, 14, 18, 20 19
Y	JP 05-294718 A (Mitsubishi Materials Corp.), 09 November, 1993 (09.11.93), Claim 1; Par. No. [0005]; page 4, classification No. 9 & DE 4313358 A1 & US 5403795 A & US 5686366 A	12-16, 18, 20

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Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See extra sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☒ No protest accompanied the payment of additional search fees.

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Continuation of Box No. III of continuation of first sheet (2)

invention 1: claims 1 and 17

invention 2: claims 2 to 4

invention 3: claims 5 to 11, 18 to 20 and a part of claim 14

invention 4: claims 12, 13, 15, 16 and a part of claim 14

The following document 1 describes a zirconia sintered article for medical use stabilized by Y_2O_3 (see claim 1), and also the matters that said sintered article contains SiO_2 and/or Al_2O_3 (see claims 1 and 3) and that it has an average grain diameter of 0.5 μm or less (see claim 4).

The following document 2 describes an abrasion-resistant alumina-based ceramic containing a ZrO_2 powder containing Y_2O_3 and having an average diameter of 0.5 μm or less, an Al_2O_3 powder and a sintering auxiliary (see example 1, sample 13).

The following document 3 describes a zirconia based sintered article containing zirconia grains containing yttria forming a solid solution therewith and alumina (see examples), and the matters that said zirconium particles have a particle diameter of ca. 0.3 μm (see page 4 Table 1) and that said zirconia based sintered article can be used as a bone head member for an artificial joint or the like (see the paragraph [0023]).

As indicated by the above descriptions, the matter that a composite ceramic defined by claim 1 of the present application is used as a biological material is a technical matter known to the public, and therefore, there is no technical relationship between the above invention 1 and the inventions 2 to 4 involving the same or corresponding "special technical feature".

Further, there is no technical relationship between respective inventions 2 to 4 involving the same or corresponding "special technical feature", and therefore, the above inventions 1 to 4 is not a group of inventions which are so linked as to form a common single general inventive concept, and accordingly, claims 1 to 20 is considered to include four inventions.

Document 1: JP 2000-191372 A (NGK Spark Plug Co., Ltd.) 11 July, 2000 (11.07.00)

Document 2: JP 09-221354 A (Nikkato Corp.) 26 August, 1997 (26.08.97)

Document 3: JP 2003-040673 A (Kyocera Corp.) 13 February, 2003 (23.02.03)